

# REVERSIBLE ARITHMETIC CODING FOR QUANTUM DATA COMPRESSION

## ABSTRACT

5 A method and structure for encoding/decoding a block of quantum data  
including removing trailing eigenstates from the block that have eigenvalues  
below a predetermined limit to retain leading eigenstates that have eigenvalues  
above the predetermined limit, encoding the remaining quantum bits retained in  
the block after the removing. The remaining quantum bits can also include a  
linear superposition of the leading eigenstates. The predetermined limit is based  
10 upon a density matrix of the block. This method of encoding produces encoded  
quantum bits and can further include decoding the encoded quantum bits by  
reversing the encoding. The decoding reproduces the remaining quantum bits and  
the encoding completely erases the remaining quantum bits. Further, the  
invention can include outputting only an encoded or decoded result.